

PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional)	
		210557US (4081-04500)	
I hereby certify that this correspondence is being electronically submitted to the U. S. Patent and Trademark Office website, www.uspto.gov" [37 CFR 1.8(a)]		Application Number	Filed
		10/792,108	March 3, 2004
on <u>9/25/2007</u>		First Named Inventor	
Signature <u>Edith Shek</u>		Bruce E. Kreischer	
Typed or printed name <u>Edith S. Shek</u>		Art Unit	Examiner
		1764	Randy Boyer
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p>			
I am the		<u>Grant Rodolph</u>	
<input type="checkbox"/>	applicant/inventor.	Signature	
<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	Grant Rodolph	
<input checked="" type="checkbox"/>	attorney or agent of record. Registration number <u>50,487</u>	Typed or printed name	
<input type="checkbox"/>	attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	(972) 731-2288	
		Telephone number	
		<u>9/25/07</u>	
		Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below".			
<input type="checkbox"/> *Total of _____ forms are submitted.			

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

REASONS FOR REQUESTING PRE-APPEAL REVIEW

I. Status of the Claims

Claims 1-16, 20-26, and 28-34 are pending in the present application and are listed on pages 2-7 of Applicant's response dated May 16, 2007. In the *Office Action* (Final Office Action dated June 29, 2007), claims 1-8, 14-16, 20-26, and 28-34 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Dixon* (WO 03/053890) in view of *Seader* (Seader et al., Perry's Chemical Engineer's Handbook, 7th Ed. New York, McGraw Hill, 1997, pp. 13-4 – 13-9), and claims 1-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Woodard* (WO 99/19280) in view of *Seader*. Claims 2-16 and 20-26 depend on independent claim 1, and claims 20-34 depend on independent claim 28. Thus, claims 1-16, 20-26, and 28-34 stand or fall on the application of *Dixon* and *Seader* to independent claims 1 and 28 and the application of *Woodard* and *Seader* to independent claim 1.

II. The Rejection of the Claims

As explained in the *Office Action*, the Examiner asserts that the claimed limitations are obvious over either *Dixon* or *Woodard* in view of a modification of *Seader's* teachings. Specifically, *Dixon* and *Woodard* are cited to teach a method for separating an oligomerization reactor effluent comprising various processing steps. See *Office Action*, pp. 3 and 8. However, *Dixon* and *Woodard* fail to teach or suggest several of the claimed limitations, including: flashing the oligomerization reactor effluent into a vapor portion and a liquid portion, feeding the liquid and vapor portions into a distillation column, and withdrawing an oligomerization product from a sidestream located between the liquid feed and vapor feed inlets to the column. See claims 1 and 28; *Office Action*, pp. 3 and 8-9. Although *Seader* teaches numerous separation systems, *Seader* fails to make up for the shortcomings of *Dixon* and *Woodard* by teaching or suggesting these claimed limitations. Instead, the Examiner creates a new separation system (the Examiner-modified Petlyuk system) by combining two distinct separation systems disclosed by *Seader*: a single-stage flash drum and a thermally-coupled separation system called Petlyuk towers. Specifically, the Examiner substitutes the flash drum for the prefractionator in the Petlyuk towers to create the Examiner-modified Petlyuk system. Only by creating this Examiner-modified Petlyuk system and combining it with *Dixon* or *Woodard* is the Examiner able to achieve

the separation system recited by the claims. As discussed below, the Examiner-modified Petlyuk system is a prohibited modification of *Seader*, and thus the Examiner has not made out a *prima facie* case of obviousness with regards to the pending claims.

III. *Seader* Teaches Away from the Substitution of the Flash Drum for the Prefractionator in the Petlyuk Towers

The Examiner-modified Petlyuk system is a prohibited modification of *Seader* because *Seader* teaches away from the substitution of the flash drum for the prefractionator in the Petlyuk towers. MPEP § 2145 states “[i]t is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).” *Seader* teaches that the Petlyuk towers and the flash drum are used in separate, distinct instances. Specifically, *Seader* states:

Petlyuk towers [are] particularly useful for reducing energy requirements **when the initial feed contains close-boiling species**. Shown for a ternary feed, the first column in Fig. 13-6b is a prefractionator, **which sends essentially all of the light component and heavy component to the distillate and bottoms respectively**, but permits the component of intermediate volatility to be split between the distillate and bottoms.

Seader, pp. 13-5. As described above, *Seader* teaches that the Petlyuk towers are suitable for those instances where: (1) the relative volatility between components is small, (2) essentially all of the light component is produced in the prefractionator’s distillate, (3) essentially all of the heavy component is produced in the prefractionator’s bottoms, and (4) substantially all of the heavy and light components are to be separated from each other. With regards to flash drums, *Seader* states:

A single-stage flash, as shown in Fig. 13-7a, may be appropriate if (1) **the relative volatility between the two components to be separated is very large**; (2) the recovery of only one component, **without regard to the separation of the other components**, in one of the two product streams is to be achieved; or (3) **only a partial separation is to be made**.

Seader, pp. 13-6. As described above, the flash drum is suitable for those situations where: (1) the relative volatility between components is very large, (2) essentially all of one component is produced in one stream without regards for the amount of the other component produced in the other stream, and (3) only a partial

separation of the light and heavy components is desired. Assuming that the flash drum produces a distillate comprising essentially all of the light component, these differences may be highlighted in the following table¹:

Table 1: Comparison Between the Petlyuk Columns' Prefractionator and the Flash Drum		
Property	Petlyuk Towers' Prefractionator	Flash Drum
Relative volatility between the light and heavy components	Small	Very Large
Amount of heavy component in the distillate	Essentially none	Some, but not all - The recovery of the light component is made without regards to recovery of the heavy component
Amount of heavy component in the bottoms	Essentially all	Some, but not all - The recovery of the light component is made without regards to recovery of the heavy component
Separation between light and heavy components	Substantially Complete	Partial

As shown in the above table, *Seader* teaches that either the Petlyuk towers or the flash drum would be used, depending on the feed composition and desired separation. For example, the Petlyuk towers' prefractionator is used for substantially complete separation of two components, whereas the flash drum is used for partial separation of two components. Consequently, the flash drum and Petlyuk towers' prefractionator are mutually exclusive separation devices. Because *Seader* teaches that the Petlyuk towers' prefractionator and the flash drum are mutually exclusive separation devices, *Seader* teaches away from the substitution of the flash drum for the Petlyuk towers' prefractionator. Thus, the Examiner-modified Petlyuk system is a prohibited modification of *Seader*, and the *prima facie* case of obviousness is lacking.

IV. The Examiner-Modified Petlyuk System Changes the Principle of Operation of the Petlyuk Towers

The Examiner-modified Petlyuk system is a prohibited modification of *Seader* because the Examiner-modified Petlyuk system changes the principle of operation of the Petlyuk towers. MPEP § 2143.01 states "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." As shown in *Seader's* Fig. 13-6b,

¹ An assumption that the flash drum produces a bottoms comprising substantially all of the heavy component would yield a similar table, but with the heavy component terms and light component terms switched.

Seader teaches that Petlyuk towers are a thermally-coupled system in that the second column is the sole source of heating and cooling for the prefractionator. Specifically, *Seader* states:

The thermally coupled system in Fig. 13-6b, discussed by Stupin and Lockhart [citation omitted] and referred to as Petlyuk towers, is particularly useful for reducing energy requirements when the initial feed contains close-boiling species. ... Products from the prefractionator are sent to appropriate feed trays in the second column, where all three products are produced, the middle product being taken off as a sidestream. **Only the second column is provided with [a] condenser and reboiler; reflux and boil-up for the prefractionator are obtained from the second column.**

Seader, pp. 13-5. As described above, the prefractionator and column of the Petlyuk towers are thermally coupled in that the reflux and boil-up for the prefractionator are provided by the column. To achieve the thermal coupling required for Petlyuk towers, the prefractionator requires at least three inputs: a mixed feed, a feed enriched in light component, and a feed enriched in the heavy component. Two of such inputs (the feed enriched in light component and the feed enriched in the heavy component) come from the second column into which the two prefractionator outputs feed. Recall that the Examiner-modified Petlyuk system substitutes a flash drum for the prefractionator in the Petlyuk towers. As described by *Seader*, a flash drum has a single inlet stream and two effluent streams, and does not receive either a reflux or a boil-up. See *Seader*, pp. 13-6 and Fig. 13-7a. Replacing the prefractionator in the Petlyuk towers with the flash drum would eliminate the reflux and boil-up streams described above, and thus would eliminate the thermal coupling of the Petlyuk towers. Because the Petlyuk towers operate via the principle of thermal coupling, the Examiner-modified Petlyuk system changes the principle of operation of the Petlyuk towers. As such, the Examiner-modified Petlyuk system is a prohibited modification of *Seader*, and the *prima facie* case of obviousness is lacking.

V. Preservation of Additional Grounds for Appeal

To simplify the issues considered by the panel, the Applicant has limited this discussion to the clear errors in the rejections issued under 35 U.S.C. § 103(a). Nevertheless, the Applicant submits that additional grounds for appeal exist and reserve the right to pursue such additional grounds for appeal should the panel elect to uphold the Examiner's rejections.

VI. Conclusion

Consideration of the foregoing remarks, reconsideration of the application, withdrawal of the rejections, and allowance of the claims are respectfully requested by the Applicant. If any fee is due as a result of the filing of this paper, please appropriately charge such fee to Deposit Account Number 50-1515 of Conley Rose, P.C., Texas. If a petition for extension of time is necessary in order for this paper to be deemed timely filed, please consider this a petition therefore. If a telephone conference would facilitate the resolution of any issue or expedite the prosecution of the application, the Examiner is invited to contact the undersigned at the telephone number given below.

Respectfully submitted,
CONLEY ROSE, P.C.

Date: 9/25/07

5601 Granite Parkway, Suite 750
Plano, Texas 75024
Telephone: (972) 731-2288
Facsimile: (972) 731-2289

Grant Rodolph
Grant Rodolph
Reg. No. 50,487

ATTORNEY FOR APPLICANT